

Amendment to the Drawings:

The attached sheet of drawings includes changes to FIG. 2. This sheet, which includes FIGS. 1-3, replaces the original sheet including FIGS. 1-3. In FIG. 2, the leader line from the dashed circle corresponding to the detail view of FIG. 3 has been removed.

Remarks:

Examiner has objected to the specification's use of the numeral 3 in FIG. 2 to label the portion of the figure corresponding to the detailed view shown in FIG. 3. Accordingly, the numeral 3 and its leader line have been removed from FIG. 2. The specification and figures are now in agreement in accordance with Examiner's requirement.

Claims 1, 2, 7, 12-17, and 20-22 remain in this application. Claims 8 and 11 have been canceled. Claims 3-6, 9, 10, 18 and 19 have been withdrawn. Claims 1, 2, 7, 13, 16, and 20 have been amended. Claims 21 and 22 have been added. Support for claim 21 is found in the specification at paragraphs [0020] and [0025] and in original claim 12. Support for claim 22 is found in the specification at paragraph 27 and in FIG. 4. Applicant acknowledges Examiner's indication that claim 17 would be allowable if rewritten in independent form.

Claims 1-2, 7-8, 11-14, 16 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Noiles 3,848,272. Examiner interprets Noiles (FIG. 1) as teaching a spherical profile thread spiraling around the shell and line. Applicant respectfully disagrees. FIG. 21 of Noiles, as well as the specification, fails to specify a spherical thread profile. The thread of FIG. 21 is formed only at the equator of the liner and appears to be on a cylindrical extension of the liner. Furthermore the threads appear to be cylindrical. At best FIG. 21 is ambiguous. FIG. 22 provides some more information about the form of the threads in FIG. 21. Referring to the specification at column 8 lines 61-66, part 162 (insert) in FIG. 22 is the same as part 162 in FIG. 21 with the exception that is made of metal and split into two mating halves. The geometry, including the thread form, is the same. With the insert split into two halves, more of the thread detail is visible in the lower half of FIG. 22. Noiles' thread is formed on a cylindrical "threaded ring portion 164". Column 8 lines 41-42. Both the thread root and thread crest are spaced above the back of the liner on the ring portion 164. Because Noiles fails to teach a spherical thread profile, all of the rejected claims are allowable over Noiles. The claims are further allowable as follows.

Claim 1 is further allowable over Noiles because Noiles fails to teach a "spherical profile thread spiraling around a portion of each of the shell cavity and liner convex back". Noiles teaches a cylindrical thread formed on a raised cylindrical ring adjacent the equator of the insert.

Claim 2 is further allowable over Noiles because Noiles fails to teach "the liner thread root being coincident with the hemispherical convex back and the liner thread crest projecting beyond the spherical convex back and following a spherical profile spaced from the hemispherical convex back". Noiles' thread is not spherical and his thread root is raised above the liner back on the "ring portion 164".

Claim 7 is further allowable over Noiles because Noiles fails to teach "the liner thread crest spiraling over most of the hemispherical convex back" or the "shell thread root spiraling over most of the hemispherical concave mating surface". Noiles thread is limited to a cylindrical "ring portion 164" adjacent the shell and insert equator.

Claim 12 is further allowable over Noiles because Noiles fails to teach “a self-locking arrangement in which a portion of the shell thread profile differs in a dimension from a corresponding portion of the liner thread profile such that upon screwing of the liner into the shell the portions interfere with one another”. Examiner refers to column 8 lines 43-46 and 58-60 as teaching a self-locking arrangement. Applicant respectfully disagrees. Lines 43-46 describe notches 166 which apparently accept a tool to facilitate turning the insert into the shell. Lines 58-60 merely describe threading the insert into the shell until it is tightly positioned with the shell. Applicant’s claim 12 claims a mismatch in thread dimensions resulting in an interference fit between the liner and shell that locks the assembly together. Noiles fails to teach any such mismatch or interference.

Claim 21 is further allowable over Noiles because Noiles fails to teach “a portion of the shell thread profile differ[ing] in a dimension from a corresponding portion of the liner thread profile” and he fails to teach “threading the liner into the shell until the portions interfere with one another and lock the assembly together.

Claim 22 is further allowable over Noiles because Noiles fails to teach “the liner thread crest being coincident with the spherical convex back and the liner thread root extending into the spherical convex back and following a spherical profile spaced from the spherical convex back”. Noiles’ thread is not spherical and his thread crest is raised above the liner back on the “ring portion 164”. Noiles’ thread is limited to a cylindrical “ring portion 164” adjacent the shell and insert equator.

Claims 1-2, 7-8, 11-14, 16, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by English 4,004,300. Examiner interprets English as teaching a spherical profile thread. Applicant respectfully disagrees. English specifically states that the liner defines “an annular portion 18, externally threaded, with a reduced cylindrical portion 19 blending into a hemispherical end 20”. English’s FIGS. 1 and 2 clearly show a threaded cylindrical ring (i.e. annular portion 18) adjacent a non-threaded cylindrical portion 19 then blending into a hemispherical end 20. Similarly, in the embodiment of FIG. 3, the threads are confined to a cylindrical ring adjacent the equator of the liner and adjacent a non-threaded cylindrical portion 33. In all of English’s embodiments, the threads are formed on a cylindrical portion extending from the hemispherical end of his liner. Because English fails to teach a spherical thread profile, all of the rejected claims are allowable over English. The claims are further allowable as follows.

Claim 1 is further allowable over English because English fails to teach a “spherical profile thread spiraling around a portion of each of the shell cavity and liner convex back”. English specifically teaches a cylindrical thread formed on a cylindrical ring adjacent the equator of the liner.

Claim 2 is further allowable over English because English fails to teach “the liner thread root being coincident with the hemispherical convex back and the liner thread crest projecting beyond

the spherical convex back and following a spherical profile spaced from the hemispherical convex back". English's thread is not spherical and is formed on "annular portion 18".

Claim 7 is further allowable over English because English fails to teach "the liner thread crest spiraling over most of the hemispherical convex back" or the "shell thread root spiraling over most of the hemispherical concave mating surface". English's thread is limited to an "annular portion" adjacent the shell and insert equator.

Claim 12 is further allowable over English because English fails to teach "a self-locking arrangement in which a portion of the shell thread profile differs in a dimension from a corresponding portion of the liner thread profile such that upon screwing of the liner into the shell the portions interfere with one another". Examiner refers to column 4 lines 51-53 as teaching a self-locking arrangement. Applicant respectfully disagrees. Lines 51-53 describe a detachable ball head that screws onto the liner. Applicant's claim 12 claims a mismatch in thread dimensions resulting in an interference fit between the liner and shell that locks the liner and shell together. English fails to teach any such mismatch or interference.

Claim 21 is further allowable over English because English fails to teach "a portion of the shell thread profile differ[ing] in a dimension from a corresponding portion of the liner thread profile" and he fails to teach "threading the liner into the shell until the portions interfere with one another and lock the assembly together.

Claim 22 is further allowable over English because English fails to teach "the liner thread crest being coincident with the spherical convex back and the liner thread root extending into the spherical convex back and following a spherical profile spaced from the spherical convex back". English thread is not spherical and his thread crest is raised above the liner back on the "ring portion 164". English's thread is limited to an "annular portion" adjacent the shell and insert equator.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noiles in view of Park 4,491,987. Examiner relies on Park to teach the use of bone cement with a hip prosthesis. Claim 15 depends from claim 13 and is allowable for the same reasons as claim 13.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over English in view of Park 4,491,987. Examiner relies on Park to teach the use of bone cement with a hip prosthesis. Claim 15 depends from claim 13 and is allowable for the same reasons as claim 13.

Applicant believes that the claims remaining in this case are in condition for allowance and respectfully requests that a timely Notice of Allowance be issued in this case. Should there be any questions about the content of this amendment or to discuss allowable subject matter, Examiner is encouraged to contact Applicant by telephone to facilitate placing this case in condition for allowance.

Respectfully submitted,

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